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ARTICLE VII.—*Observations on the Removal of Foreign Bodies lodged in the Œsophagus. Read before the Philadelphia College of Physicians 30 July 1828. By HENRY BOND, M.D.*

[With a Plate.]

There are few medical practitioners who have not been perplexed with cases of a foreign body lodged in the passage from the mouth to the stomach. And it must be admitted, that the subject has been treated of by surgical writers more vaguely than would seem to us consistent with its importance; whether we regard, on the one hand, the surgeon's perplexities and failures, or, on the other, the patient's distress and danger. Cases often occur where the result is fatal; and perhaps there is no one where the practitioner is oftener unsuccessful in fulfilling a clear indication. This is not, I apprehend, owing to any intrinsic and insurmountable difficulty; and had it received as much attention as some others of not more importance, the practitioner might be charged with mal-practice, who should fail of giving prompt relief to his patient. Some who have written systems of practical surgery have wholly omitted the subject. One reason of this neglect perhaps may be, that in the treatment of these cases reputation is neither acquired nor lost. They are much less attractive to popular admiration than those cases where there is a display of knives, and gashes, and blood. As one proof of this, it may be remarked, that the dealers in terrible

accidents and operations seldom deem these cases worthy of a place in their chronicles.

Foreign bodies are usually arrested so high in the fauces or pharynx, that they are visible upon depressing the tongue, and looking into the throat. In such cases relief is usually afforded without difficulty by means of the fingers or a dressing forceps. But when the body has passed into the œsophagus, beyond the reach of the eye and the finger, the difficulty is much increased. The difficulty and danger of the case will also depend very much upon the size, form, and composition of the body. In some instances if relief be not afforded by the prompt removal of it, the patient is suffocated, and perishes immediately. Does this result depend upon the mechanical obstruction to the trachea, or upon the spasmodic constriction of the muscles of the glottis? Mr CHARLES BELL says, (and the opinion was adopted by Dr DORSEY) that, "it is not the mechanical obstruction to the trachea which we have to dread from bodies sticking either in the trachea or œsophagus; it is the spasmodic contraction of the muscles of the glottis." After enumerating all the substances which are liable to lodge in the throat, he says, "*all these* endanger suffocation by exciting the muscles of the glottis." This opinion may be true so far as it applies to foreign bodies in the trachea; but as it regards the pharynx and œsophagus, it is confirmed neither by my observation, nor by the cases which I have found recorded, or which have otherwise come to my knowledge. In nearly or quite all of those cases where immediate suffocation takes place, the body is of sufficient magnitude to produce a mechanical obstruction. The patient, through fright or voraciousness, attempts to swallow a large piece of tough meat, or other substance; the epiglottis falls down; the foreign body descends upon it, and becomes impacted between the horns of the os hyoides and those of the thyroid cartilage, where it is held by the efforts of the muscles of the pharynx to carry it down. Where there is a spasmodic closure of the glottis produced by the irritation of a foreign body, there will be a spasmodic effort of the chest to throw it off by coughing. If coughing could be induced in the case we are contemplating, there is very little doubt but the body would thereby be dislodged. But the mechanical pressure upon the epiglottis prevents the inspiration, without which coughing cannot take place, at least with any considerable impetus.

When suffocation takes place, in consequence of the inflammation

and tumefaction caused by the pressure of a foreign body, the result is not attributable to the irritability of the glottis, but to the mechanical obstruction produced by the swelling. Where death occurs suddenly, after the lodgement of a large body at the top of the larynx, the glottis does probably contract spasmodically; but if the body did not act mechanically, in the manner above described, coughing would be induced, and the body dislodged. A barb of rye or wheat, or other small body, may become fixed in or near the glottis, and irritate so much as to lead to a fatal result by coughing or otherwise; but I know of no instances where suffocation has been produced by pins, needles, fish bones, or the like, irritating the glottis to contract spasmodically.

These views seem to me to be legitimate deductions from the anatomy and physiology of the parts, and from the history of cases as far as they have come to my knowledge. But I forbear any further discussion of this point, as I began this communication with the intention of making only some practical remarks on the means and methods of treatment. This will necessarily vary, according to the properties of the body, and the part of the canal in which it is arrested. This most commonly takes place in the middle or lower part of the pharynx, but it may occur at any point between the palatine arches and the cardia. If the body be large, it will not descend to the narrower or lower part of the pharynx, but will be fixed at, or near the top of the larynx. It is the lodgement of a large body at this part, which occasions nearly all the sudden deaths which occur from foreign bodies lodged in this canal. Death occurs so suddenly in these cases that medical aid is seldom obtained until the patient is beyond its reach. Were a person at hand at the occurrence of the accident, who understood the nature of the case and the remedy, relief would be easy and certain; for in these imminently dangerous cases, the body will be found, as before stated, locked between the cornua of the os hyoides and thyroid cartilage. From this position it may be removed by the finger or by the common dressing forceps, if the curved forceps are not at hand. If the foreign body be in any other part of the pharynx, there will be much less immediate danger.

In most cases where a foreign body is to be removed from the throat by the fingers or by other means, it would be advisable to put a piece of soft wood or cork between the teeth. This advice is, however, of less importance to be observed, than that of Mr C. BELL, who says, "we ought not in an impressive and rapid manner

to seize upon the patient; for this puts him into terror and anxiety, that increases the difficulty of breathing. Without much loss of time, it is possible to sit down before him in that composed manner which will give him confidence of relief."

If the body is to be removed by the fingers, let the patient's head be erect, and held in such a manner as to make the chin project as little as possible beyond the pomum Adami. This will enable the operator to carry his finger considerably farther into the pharynx than when held in the natural position, and he can with ease reach that part where the body lodges. If the body descend beyond the reach of the finger when held in this manner, it will be too low to endanger an immediately fatal result, unless it lodge directly opposite to the top of the sternum. By pressing on the posterior part of the thyroid and cricoid cartilages, a large foreign body may produce some difficulty in respiration, but very seldom to a dangerous extent, as those cartilages have so much firmness, that they would be shoved forward or to one side, before they would be so compressed as to stop respiration. The trachea is much more easily compressed, but it is also surrounded by parts so loose and lax, that a foreign body in the Œsophagus would displace the trachea, before it would compress it so as to interrupt respiration, except at the top of the sternum, where it might take place to a dangerous extent. This view is supported by a case recorded in the 3d volume of the Dublin Hospital Reports. Something had stuck in the throat of an aged woman while eating, which nearly produced fatal suffocation; and on inquiring where she felt the distress, she pointed to a particular part of the throat which appeared to be directly *opposite to the top of the sternum*. Mr HOWSHIP "passed a probang down her throat to the piece of meat forming the obstruction, and pushed this substance *nearly down* into the stomach, when relief was immediately obtained, it being evident that the mechanical pressure of the trachea had been the sole cause of the severe symptoms." I might, with propriety, have referred to this case as confirmative of the views which I advanced when examining Mr BELL's opinion of the cause of suffocation. The efforts of the finger may be aided when the body is large by grasping the trachea and Œsophagus with some firmness immediately below the point where the body rests, and at the same time shoving the hand upwards. This grasp, for obvious reasons, should not be long continued. If the body cannot be removed by means of the finger alone, let the tongue be depressed by

the fore finger of the left hand on a spoon handle, and the operator will be able to see the body and grasp it with a forceps. If a gula-forceps is not at hand, the common dressing forceps will answer the purpose. Any person with self-possession and an ordinary share of manual dexterity might be very readily taught how to afford relief in such cases, although possessed of no anatomical knowledge or surgical skill.

Besides the larger bodies, to which the preceding remarks have more special reference, other bodies, such as needles, pins, bones, &c. may lodge in the fauces or pharynx without endangering suffocation. These cases are, however, not always free from difficulty and danger, as may be seen by referring to baron LARREY's account of the case of M. Esteve*. The difficulty in such cases arises principally from the smallness of the body allowing it to be concealed in some sinus. This at least was the fact in the case referred to; but there are, I apprehend, few such lurking places about the fauces, which could not be explored by the finger or the eye.

When the foreign body descends into the bottom of the pharynx, or into the œsophagus, although the immediate danger is lessened, the operator's task becomes more difficult, and the difficulty increases in proportion to the depth to which it descends, unless the body be such as may with safety be forced into the stomach by means of a probang. So great, indeed, has the difficulty been considered, that the idea of extracting a body from the œsophagus through the mouth by instruments seems to have been almost hopeless among surgeons. When a body has passed out of sight, or out of the pharynx into the œsophagus, Mr B. BELL says, "No advantage can be derived from the forceps; and we are in such circumstances reduced to the necessity of either allowing it to remain where it is; of pushing it into the stomach; or of extracting it by laying the œsophagus open." "In every case of obstruction of the œsophagus," proceeding from a foreign body being fixed in it, he says, "it is almost the universal practice to endeavour to push it into the stomach."

Mr BELL indicates the cases where he thinks this would be "the most prudent method of getting free from it;" at the same time pointing out the danger of the indiscriminate use of the probang, as

* See HALL's translation of LARREY's *Memoirs of Military Surgery*, Vol. I. p. 142.

well as the mischief which may result from the use of strong vomits. It will be seen by referring to his Surgery, that he never contemplated the removal of a foreign body from the Œsophagus by forceps, or any other instrument except the scalpel; and we are directed to make no attempts to remove it unless the symptoms are very urgent. We must wait for the body to decompose, or until the Œsophagus ulcerates enough to give it an outlet. If however the symptoms are too urgent to admit of this delay, we must, as he thinks, proceed to Œsophagotomy. Mr ALLAN BURNS entertained nearly the same opinion as Mr B. BELL of those cases where a foreign body gets below the pharynx. "But if it stick just at the top of the Œsophagus," he says, "it is there too low to be laid hold of by the fingers; and even the curved forceps can hardly be so applied as to extract the foreign body; neither will the probang enable us to force it into the stomach; or granting that it would, we may have reasons for not wishing to place it there." If, in such a case, the foreign body occasions very unpleasant symptoms, he says, "there ought to be no hesitation in performing the operation of Œsophagotomy." It was the opinion of Dr DORSEY (which we presume was also that of Dr PHYSICK) that foreign bodies can be extracted through the mouth, only when they are situated high up near the fauces. "If near the stomach, they must," says Dr DORSEY, "be pushed down, and the risk of the consequences incurred."

Some surgeons, on account of the dread which they attach to the operation of cutting into the Œsophagus, which they think should almost never be performed, have proposed several instruments or contrivances for the extraction of foreign bodies from this canal. The success of practice in these cases shows that the patient is very often obliged to trust to *vis medicatrix naturæ*, rather than to these contrivances for his safety. I shall first notice in a brief manner the means which have been proposed for extracting foreign bodies from the Œsophagus, and then propose some of my own, which I venture to hope may be considered improvements in the treatment of such cases.

The instruments which have been recommended, or are now in use in such cases, are forceps, hooks, compressed sponge, and loops of thread or horse hair.

It is hardly proper to include the *forceps* among the instruments employed for extracting foreign bodies from the Œsophagus, as I have already shown that it is generally concluded to be inapplica-

ble to such cases. The crooked, or gula-forceps (fig. 2) is well adapted for the removal of large foreign bodies from the pharynx; but for extracting bodies from the œsophagus, it is defective in several respects. It is too short; its curve is such that it would be next to impossible to carry it down that canal if it were long enough, being curved in such a manner as to be accommodated to the course of the canal when the head is held in a natural position; the blades come into opposition by broad surfaces, terminating in an acute prominent edge, like two half cylinders; so that when the instrument is passed down the throat we are almost sure to pinch some of the surrounding soft parts, if we attempt to grasp any small body; if we grasp a pin or needle, the teeth or deep transverse grooves in the blades render it necessary either to bring out the body transversely, something like dragging a fish-hook through the fauces, or to run a great risk of losing our hold of it. On referring to a large volume of plates of surgical instruments, published at Vienna, by G. A. BRAMBILLA, I find some crooked forceps considerably longer and heavier than those now in use here and in England, but liable to the same objections, and from their shape evidently not intended to be carried below the pharynx. The crane-bill forceps, recommended by Mr C. BELL, is exempt from none of the foregoing objections. In short, we may say that these instruments cannot be trusted out of sight. The forceps recommended by Mr J. HUNTER for extracting foreign bodies from the urethra, has been recommended also for extracting small bodies from the throat. It would be less liable to pinch the contiguous soft parts, but in every other respect it seems to be decidedly inferior to the common dressing forceps*. The *ostagra* of professor

* In the Medico-Chirurgical Transactions, Vol. XI. page 359, there is an account of a modification of Mr WEISS's bullet forceps, by which it was converted into an instrument for the extraction of small calculi from the bladder. Mr SAMUEL COOPER, referring to this instrument in the fifth edition of his Surgical Dictionary, says "no instrument seems better calculated for cases in which the body lodged in the œsophagus is not too wide." It does not however appear to me superior in any respect to DESAULT's modification of HUNTER's forceps, either for extracting urinary calculi from the bladder, or foreign bodies from the œsophagus. And, by the way, we cannot forbear to express our surprize, that Sir ASTLEY COOPER should have been ignorant of the practice of DESAULT so late as 1820, six years after it had been circulated in the United States in an English translation. In size and shape, the forceps above recommended by Mr

VENEL was contrived to be employed in these cases; but it is a complicated awkward instrument, whose place can, in every instance, be better supplied by some other.

Every writer at present, who treats on this subject, recommends the use of a hook. It was formerly the custom to attach a small steel hook to the handle of a probang, or to a piece of whalebone, by means of a piece of watch-spring. But it is of late commonly recommended to be made of a doubled and twisted wire, with a loop at the end bent into a hook. We find a representation of its figure in some surgical works, and nearly the same in each. Fig. 5 is the same as that in Mr S. COOPER's First Lines, and does not differ essentially from that represented in Mr C. BELL's Operative Surgery. There are very few cases to which such a hook would be well adapted. It is ill suited to extract a coin, as such a body would be so liable to slip out of it. It would take no hold of a pin, needle, or fish-bone; for when these bodies are lodged in the Œsophagus, they have descended point foremost; the point catches in some ruga or lacuna, and the efforts made to carry them down into

S. COOPER, has almost an exact resemblance to a large male silver catheter bisected longitudinally about three inches and a half from its point. These two halves or sections are opened by a stilet sliding in the inside; and are closed only by their own elasticity. Its curvature will not allow it to pass much below the bottom of the pharynx; and if it should be forced lower down, the point would press so hard against the anterior part of the Œsophagus, that there would be very little chance of seizing the body, and every probability of embracing a large fold of the canal in closing the blades. There is no way to regulate the force applied to the body which it embraces, and it must be small, or that stilet would not open it. The blades form so large an angle with each other when opened, that no body would be held securely except the small calculi, for which it was intended, or other small globular bodies. As an Œsophagus forceps, it is therefore in no respect superior to the common curved forceps. It is true, it has no joint; but when a forceps is carried down into the Œsophagus, there is so little motion in the joint when the blades are opened or closed, that there is not much probability that the soft parts will be injured there.

In PERRET's *L'Art du Coutélier*, plate 98 is the representation of a forceps designed for the removal of foreign bodies from the Œsophagus. It is called *acanthobalon* by PAUL, HILDET, and others. Excepting its curvature, it is made exactly like the common bullet forceps. The instrument is straight until we pass an inch and a half beyond the joint. The rest of the blades are bent so as to correspond nearly with the quadrant of a circle whose diameter is eight inches. Its curve is therefore more favourable to a deep introduction into the Œsophagus than any other of which I find any account. Its defects may be perceived from what I have already said of others.

the stomach have often driven the point into the side of the canal, so as to adhere with considerable firmness. The upper or obtuse end of these bodies is generally loose or floating; that is, it is not fastened into the opposite side of the œsophagus. This doubtless is not always the case, but how often both ends are fastened in opposite sides of this canal it is not easy to determine. Under either of these circumstances there is not a great probability that such a hook as that represented by Mr COOPER would dislodge one of these bodies, and none that it would extract them by the mouth. All that Dr DORSEY says upon the use of hooks, is, "that a hook of curved wire is also useful in some cases for extracting foreign matters, especially when they are of considerable size." Upon this opinion, unsustained by experience as far as I know, it may be remarked, that if the body has lodged in consequence of its size, it would be very difficult to pass a hook below it, especially if the hook were large enough to take hold of "a body of considerable size." There is therefore every probability that a hook of the ordinary form would act as a probang. Besides, let a person attempt to apply such a hook to any body of a regular or rounded form, or a smooth surface, such as a nut, a peach-stone, a lump of meat or potatoe, and he will in a moment see how improbable it is, that such a hook would extract such a body. If the body to be removed had any holes or projections upon which the hook could fasten, and would at the same time allow the hook to pass below it, in such a case the hook might be useful; but under this restriction its use must be very limited.

Mr C. BELL says, "Nothing is so good to pull up bodies from the œsophagus and pharynx as a piece of wire twisted and bent into a hook, as I have represented in the plate. The advantage of this simple instrument is, that it can be made of any form, or take any curve, enabling us to adapt it so as to operate upon that side where the pin or bone is supposed to lodge." We admit the superiority of the wire-hook over others and for the reason he has assigned; but we are extremely doubtful of the ability of Mr BELL or any one else "*to pull up* from the œsophagus and pharynx" either a pin or stone with the hook he has represented.

For the extraction of a pin from the œsophagus, he has proposed to carry loops of horse hair down to it on the end of a wire through a hollow tube, in the expectation of entangling the head of it. The probability of the success of this contrivance is sufficient to warrant

a trial of it, when other more certain means are not at hand. For the extraction of needles and fish bones, he offers no rules nor means which encourage us with any prospect of success. Neither his forceps, nor his hook, nor his loops are applicable to such cases.

Mr S. COOPER's ingenious method of using compressed sponge seems to me more extensively applicable, and to hold out a greater prospect of utility, than Mr BELL's loops of hair. It would, however, much more frequently dislodge small bodies that become fixed, than extract them through the mouth. One objection to it is, that if the first trial were not successful, it would require a considerable time to prepare the sponge to repeat the experiment.

It is easy to conceive of cases where it would be hazardous to resort to vomiting for the removal of foreign bodies; for they may have such sharp points or edges, or raggedness, that we should run a great risk of cutting or lacerating the passage by their violent action. A very small portion, however, of those bodies, which lodge in the Œsophagus, have a form which precludes the use of emetics. They promise to be more certainly useful, where the body is of a regular or rounded form and smooth surface, and is arrested in the passage on account of its magnitude. If a small body, having only one rough or sharp point (such as a pin, or one half of a round bone of a bird or chicken), be arrested in the passage, we may always presume that it has descended point foremost. In such cases emetics may be used with impunity; but, if the descending point be so slender as to penetrate with ease the side of the canal to a considerable depth, we shall use them with small prospect of success. Such a piece of bone as that just mentioned would without much doubt be thrown up, as the point would not penetrate far, and it would be of such a size, that both the contents of the stomach passing up, and the inverted action of the canal would have some power over it. When the sharp slender point of such a body as a pin or needle penetrates the side of the Œsophagus, the direction of the body is as nearly transverse to that of the canal as its length will admit of; but when an emetic operates, the pin is brought nearly parallel to the axis of the canal, which will occasion the point to stick more firmly, and at the same time neither the contents of the stomach passing up nor the inverted action of the Œsophagus can act with any force upon it. Hence pins can seldom be removed by this means, especially if they have been lodged a considerable time, and attempts have been made to carry them into the stomach. I have repeatedly employed vomits in such cases, and

never with success; but I once removed part of the clavicle of a chicken immediately by the use of sulphate of zinc. The above remarks will apply to a needle, except for the circumstance that the two ends of it, especially if it be small, may fix in opposite sides of the canal. In such a case, an emetic will cause the body to be more firmly fixed; but if the needle be long and large we need not dread this accident, for it will remain nearly parallel with the course of the canal. An irregular rough fragment of bone would perhaps never be removed by the mere inverted action of the œsophagus, but it might sometimes be forced up by vomiting, if this should be induced soon after swallowing a considerable quantity of solid food. The success attending the use of vomits for the removal of *coins* from the œsophagus is not such, so far as I can learn, as to encourage a resort to them. A case occurred within a few days in this city, where vomits were repeatedly tried without success in the case of a child who had swallowed a half cent. After a coin has been in the œsophagus for some time, the part where it lodges has, from continued distention, lost its contractility; the parts above and below contract, perhaps the more on account of the neighbouring irritation; a sort of pouch or sinus is formed for the foreign body, and, as the natural position of the coin would be vertical, there would be space enough for the contents of the stomach to pass up without dislodging the coin.

Two cases are quoted in the *Dict. des Sciences Med.* Tom. VII. p. 21, 22, in which persons, at the very point of suffocation from the lodgement of large pieces of tough meat in the pharynx, were relieved by injecting a solution of tartarized antimony into a vein in the arm. In DORSEY'S *Surgery* two cases are noticed, in which Dr PHYSICK removed peach stones from the pharynx by directing the patients to take a solution of tartarized antimony in the mouth and to attempt to swallow it. These and other similar cases show that it would be very unwise to discard emetics from among the means of treating such accidents.

Another means of relief deserves to be noticed, as it has succeeded in cases where other means failed. As professor RICHARD W. HALL, of Baltimore, is the only writer by whom I find it mentioned, I will present it in his own words. It is contained in a note to his translation of LARREY'S *Memoirs of Military Surgery*, Vol. I. p. 143. "When a small bone is lodged in the fauces or œsophagus, it may be decomposed, or rendered so flexible that it will pass into

the stomach, by taking frequently of diluted mineral acids. They should be taken through a tube to prevent their action on the teeth. The strength of the acid should be accommodated to the sensibility of the parts over which it must pass. By this means I have succeeded in removing a small chicken bone from the œsophagus, across which it had remained firmly fixed for several hours, although an emetic had been administered, and the curved forceps and probang had been repeatedly used without success. Experiment shows, that even the acetic or acetous acid will decompose the bones of fish, and leave them in a pliant and gelatinous state."

Although forceps have never been carried deep into the œsophagus, a slight attention to the subject is sufficient to satisfy any one, that there is nothing in the structure of this passage to prevent the introduction of an inflexible instrument to any depth. I have already pointed out the defects, as they appear to me, of all the forceps which have been recommended for the extraction of foreign bodies from this passage; and these defects may all be traced to two erroneous ideas, viz. 1, That a forceps cannot be trusted below the pharynx for fear of pinching or lacerating the soft parts; and 2, that the bend of the instrument must be adapted to the course of the passage when the head is held in its natural position. While held thus it would be impossible to carry an inflexible instrument to the bottom of the œsophagus; but by carrying the head back to no dangerous or painful extent, even a straight instrument may be carried down into the stomach, as is evinced in the performances of jugglers, who swallow swords, &c.

I have caused a forceps (fig. 1) to be made, which seems to me to possess some advantages which do not belong to any other.

1. I have given it such a curve, that when the head is held back in a proper position, it may be introduced into the œsophagus to any depth, even into the stomach. Whether in this first attempt I have succeeded in giving it that curvature which upon further trial shall be found best, I cannot assert; but my object was to make it such that it would pass down with facility when the head is carried back, so as to make the axis of the whole passage from the mouth to the stomach approximate as near to a right line as could be done without giving the patient inconvenience. In some trials with it, I found it could be introduced with great ease. An inexperienced hand would be less liable to carry its point into the larynx, than that of the common curved or gula-forceps. Should experience hereafter

indicate any change in its shape, it probably will be to make it less curved.

2. The next advantage which it possesses, is, that the blades may be opened and closed in the œsophagus without pinching or otherwise injuring the contiguous soft parts. This object is fully accomplished by the manner in which the edges are ground or beveled off; and by the sheath of elastic gum which embraces the joint without impeding its motion. The blades of the forceps are so long and can be opened only so short a distance in the œsophagus, that there will be very little motion at the joint, and in almost every case I should therefore consider the sheath superfluous. Should any one consider the instrument unsafe without it, it should be a little longer than the joint, and may be made by sewing with the glover's stick a thin piece of gum elastic, of the proper dimensions; or it may be made more neatly by adopting the method for making a tube, which is recommended in Ure's Chemical Dictionary. (See Art. *Caoutchouc*.)

3. Another advantage is, that by means of the narrow line of rough surface by which the blades come in contact, it will hold such a body as a pin, needle, fish-bone, &c. more securely than the common curved forceps, and extract it with little or no danger of lacerating any part of the passage. At the same time that it holds the body fast, it allows it to vibrate freely, and to assume a position nearly parallel to the blades. For the extraction of a coin its adaptation seems to be perfect. In short, it appears to be more especially adapted to the removal of those bodies which are arrested on account of their form, and not on account of their volume. When a body, without any sharp points or projections, such as a chesnut, a small apple, or piece of meat, is lodged in the œsophagus, we may presume that the canal, at that point, will be so distended that there will be some difficulty in passing the blades below the body. This probably will seldom be practicable where the body has been forced down by the bold application of the probang. But where the body has been carried only so far down as it could be done by the action of the muscles, it is probable that by opening the blades so as to distend the œsophagus considerably, just before they reach the body, they might be carried below it. By opening the blades in this manner they would necessarily pass down on opposite sides, so as to bring the body between them, and embrace it securely, unless it were vitreous or very hard and polished. But in most cases of

large, regular, or smooth bodies lodging in the œsophagus, if there be any difficulty in extracting with instruments, we may resort to emetics with very strong hopes of success ; for it is to such cases that they are more especially adapted.

Although I believe there are few cases where the need of a hook will not be superseded by the forceps here presented to the profession : yet, as I have pointed out the defects of such a hook as we find in the books, I take the liberty to offer some modifications, as hooks may be made extemporaneously when a forceps is not attainable. The hook fig. 3 is intended more especially for the extraction of pins. It may be made of doubled wire, but I should prefer it single, similar to the plate. A single wire is sufficiently firm for all the force it would be prudent to employ ; it presents a smoother surface to the soft parts over which it passes than a doubled and twisted wire ; it is more easily bent so as to act in different directions ; and perhaps there would be some small difference in its favour in the facility with which it would catch the body sought for. If it should be thought that the lower end of the hook, on account of the shortness of the bend, presents too sharp a point to be passed with safety down the œsophagus, cover the point with a drop of sealing wax. This precaution would be needless in hands of ordinary dexterity,—and destitute of it, no one ought to meddle with surgery. The space between the ascending and descending parts of this hook should be accommodated to the size of body to be extracted. In general it should be such as to admit the body of a brass pin with ease, without allowing the head to slip through. The two parts of the hook should be parallel to each other, about half an inch upwards from the bend ; otherwise there will be danger, as soon as we have caught hold of a pin, that it will slip out and pass into the stomach, as I have repeatedly experienced ; and, instead of extracting, we shall only dislodge it. With this hook there would be a better chance of dislodging, if not of extracting, a needle than with any other ; but even with this it would be a doubtful experiment, and time ought not to be wasted where the forceps are procurable. The softer texture and more uneven surface of most other long and slender bodies render it much more probable that they could be extracted by this hook. To prevent the escape of a body from this hook, a very simple addition to it might possibly be found useful in some cases. I do not propose it, however, with much confidence in its utility. Let a wire, similar to that of which the hook

is made, be bent at one end into a ring, just large enough to slide upon the handle of the hook ; and let the wire to which this ring belongs slide through another ring at the top of the handle of the hook. By dropping this sliding ring upon a body, when caught in the hook, there might, in some cases, be a greater probability of extracting it.

For the extraction of a coin from the œsophagus, the lower part, if not the whole of the hook (fig. 4) should be a doubled wire. The descending and ascending parts of it should be only far enough apart to admit the coin with ease, and the two parts of the wire at the bend should be so far apart that it would not be apt to roll out. The descending and ascending parts of the hook should be parallel to each other, so far as to sustain the coin in a vertical direction ; but the point should stand off so far from the handle as to make it easy to catch it. A hook made in this manner would have some advantage over that which was presented to the profession two or three years ago by Dr NATHAN SMITH of New Haven. A coin would be less liable to escape from it, on account of the much broader resting place for it at the bottom ; the opening of it is such that it would more readily take hold of the body ; the handle may be readily bent so as to act in any direction ; and it may be made extemporaneously out of a piece of common wire.

Although a probang may in some instances be used with safety, I apprehend that surgery would sustain no essential loss if it were entirely discarded from its apparatus ; for in every case where it would be applicable, the patient would be relieved with more ease and safety by the forceps, or by vomits. In those cases to which a hook is applicable, the probang should seldom or never be employed. Whether, therefore, it be advisable to retain among our apparatus an instrument which is never necessary, and which is so liable to be used in improper cases, it is not for me to decide ; and whether any thing contained in this communication be entitled to the distinction of an improvement in surgery, I leave to be determined by this very competent tribunal, and by a profession whose test is experiment.

Explanation of the Plate.

Fig. 1 is drawn from a forceps twelve and a half inches in length, which will reach two or three inches below the top of the sternum. For reaching the bottom of the œsophagus in the adult, the instru-

ment should be two to four inches longer. The curve corresponds nearly to a circle, whose diameter is twenty-four inches. It does not, however, exactly correspond to a circle, for the curvature lessens in passing from the handle to the point. The joint should be distant from the point not more than three-fifths of the length of the instrument, and be made long, in order that the blades may with more certainty come exactly in opposition. The edges of each blade are ground away with such a bevel that the blades present to each other, where they come in contact, an obtuse angle of about 130 degrees. This angle on each blade is made rough by cutting it into a row of teeth, either by a chisel or a file. The point of each blade is ground off like the edges, so that the row of teeth is not continued quite to the point. This figure is half size.

Fig. 2 is an outline of the common curved or gula-forceps, presented here to illustrate its defects by contrasting it with my own. The curvature commences two inches beyond the joint; and from that point it forms the sextant of a circle, whose diameter is six inches. This might with propriety be named the *fauces forceps*. It is half size. See page 284.

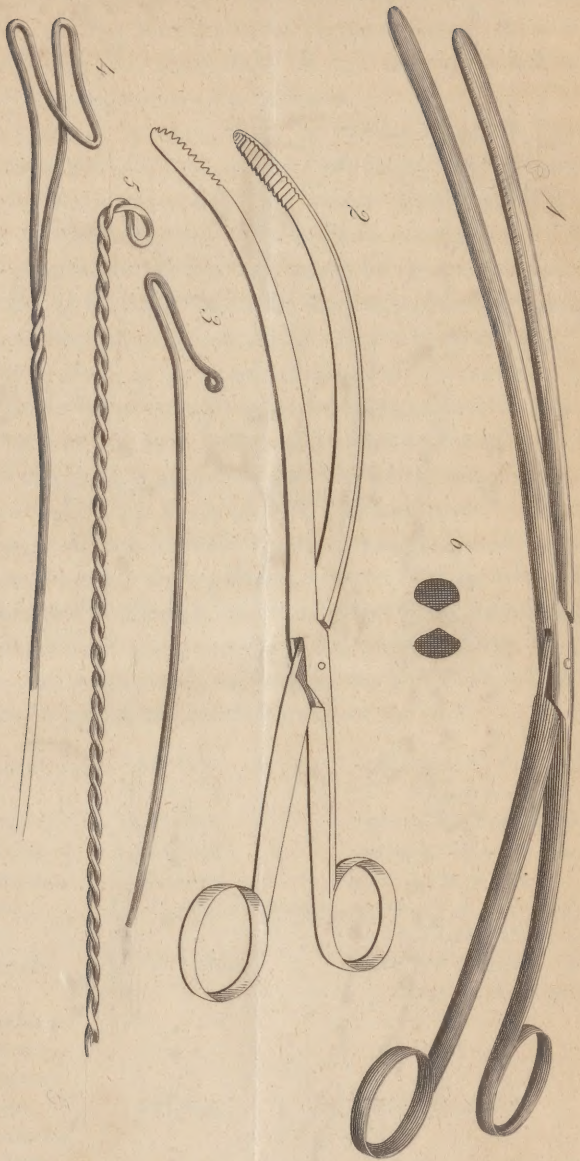
Fig. 3 is the hook which I propose for the extraction of pins, &c. It is of the full size, and sufficiently explained at page 291.

Fig. 4 is the hook proposed for the extraction of coins from the œsophagus, and is of the full size. See page 292.

Fig. 5 is copied from the hook represented in COOPER's First Lines. See page 285 of this communication.

Fig. 6 represents a transverse section of the blades of the forceps fig. 1.

Pont's Ophthalmic Forceps



Wm. Mason, del.

Wm. Mason, sculp.

